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09/672,455	09/29/2000	Tetsuya Ishii	30290A	1284

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 09/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/672,455

Applicant(s)

ISHII, TETSUYA

Examiner

Audrey Y. Chang

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 36,40,42 and 52 is/are pending in the application.
- 4a) Of the above claim(s) 8-15,17-34,37,38 and 43-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 36,40,42 and 52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Remark*

- This Office Action is in response to applicant's amendment filed on June 30, 2003, which has been entered as paper number 20.
- By this amendment, the applicant has amended 36, 40, and 42, has canceled claims 49-51 and has newly submitted claim 52.
- Claims 36, 40, 42 and 52 remain pending in this application.
- Claims 8-15, 17-34, 37-38, and 43-48 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 8.

### *Response to Amendment*

1. The amendment filed on June 30, 2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the newly added claim 52 recites that the refractive indices for the three optical regions having the cited relationship of  $n_1 < n_2 < n_3$  that is not supported by the specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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3. Claim 52 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The reasons for rejection based on newly added matters are stated in the paragraph above.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claim 52 is rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Knop (PN. 4,426,130).**

Knop teaches a *phase grating structure* that is comprised of a first optical transparent region (108, Figure 6), a second optical transparent regions (102) and a third transparent optical region (100) each having a refractive index. Knop teaches that a first relief type diffraction grating (106) is formed at the interface between the first and second optical regions and a second relief diffraction grating (104) is formed at the interface between the second and third optical regions. Each of the diffraction grating has a depth and a pitch with the pitch identical to each other. Knop also teaches that the two grating are aligned to each other. The phase grating structure with the relief type gratings is designed to diffract light. Knop teaches that the first optical region may be amber, which has an index refraction of 1.0. The second optical region has a refractive index of 1.38 and the substrate or the third optical region has a refractive index of 1.6, (please see column 6). This means the refractive indices for the three optical regions have the relationship  $n_1 < n_2 < n_3$ . ***This reference has therefore anticipated the claim.***

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 36, 40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Sakata (PN. 4,729,640).**

*Claims 36, 40 and 42 have been significantly amended; new grounds of rejection are necessitated and are as follows.*

**Sakata** teaches a liquid crystal light modulator device that is comprised of a first transparent substrate layer (3), serves as the *first optical region*, a liquid crystal layer (2), serves as the *second optical region* and a third transparent substrate layer (3) serves as the *third optical region* wherein two relief type *diffraction gratings* are formed at the interface between the first and the second optical region and at the interface between the second and the third optical region respectively, (please see Figures 2A-2D, columns 5, 7-8). Each of the two relief-typed gratings has a pitch and a depth wherein the depth and the pitch are identical to each other in the two gratings. The first, second and third transparent optical regions have refractive index of  $n_1$ ,  $n_2$  and  $n_3$ , respectively. The three optical regions are brought into contact as shown in Figures 2A to 2D. **Sakata** teaches that the refractive index of the liquid crystal layer can be switched so that when it is different from the refractive indices of the transparent substrate layer, it forms diffraction gratings that diffract incident light. **Sakata** teaches the transparent substrates may be made by glass having refractive index 1.78 and the liquid crystal material can have ordinary refractive index about 1.52, which means that the refractive index for the first and third optical regions ( $n_1$  and  $n_3$ ) is greater than that of the refractive index for the second optical regions.

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This reference has met all the limitations of the claims with the exception that in Figures 2A to 2D it does not teach that the relief type gratings are aligned with top and bottom to each other. However the orientation of the gratings or geometry of the gratings are the known factors in the art for designing the gratings to have the desired diffraction properties, since the grooves positions determine the optical path length difference, which is the essential factor for designing the diffraction property of the gratings. It would then have been obvious to one skilled in the art to modify the groove position so that they aligned to each other for the purpose of creating a diffractive optical element has desired diffraction property.

With regard to the feature concerning the thickness of the grating, this reference does not teach explicitly that the gratings satisfy the cited condition for being a *thin grating*. However this condition is commonly known in the art for designing and identifying a thin grating. It would therefore have been obvious to one skilled in the art to design the gratings to satisfy the criterion for the purpose of producing a thin grating structure.

With regard to the feature concerning the wavelength range, Sakata teaches that the diffractive modulation device with grating structure is operable within visible wavelength range between 400 nm to 700 nm. The middle wavelength within the range is 550 nm. The difference between the longest and shortest wavelength in the range is 300 nm and it is greater than 0.05 times 550 nm.

### ***Double Patenting***

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the

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conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 36, 40, 42 and 52 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 of U.S. Patent No. 6,157,488. Although the conflicting claims are not identical, they are not patentably distinct from each other because they essentially claim the same diffractive optical element having two relief gratings, with identical pitch, at interfaces of the first and second optical regions and the second and third optical regions, respectively. The relationships of the refractive indices for the optical regions recited in the instant application are included in the relationship concerning the refractive indices in the cited patent.

#### *Response to Arguments*

10. Applicant's arguments filed on June 30, 2003 have been fully considered but they are not persuasive. The amendments to the claims and the newly submitted claim have been fully considered and they are rejected for the reasons stated above. Applicant's arguments are mainly drawn to the amendments and they have been fully responded in the paragraphs above.

#### *Conclusion*

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action

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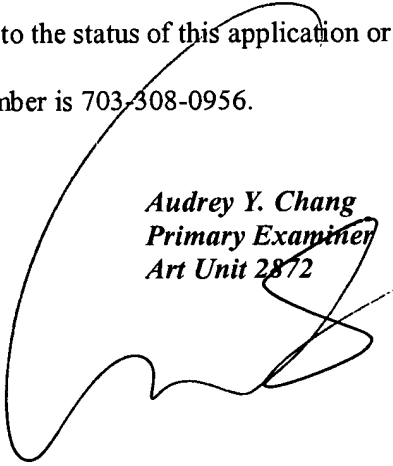
is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Audrey Y. Chang*  
*Primary Examiner*  
*Art Unit 2872*



A. Chang, Ph.D.